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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,632	11/20/2003	Kazufumi Sato	2003_1687	6339

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WASHINGTON, DC 20006-1021

EXAMINER
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THORNTON, YVETTE C

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/716,632

Applicant(s)

SATO ET AL.

Examiner

Yvette C. Thornton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/521,205.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11202003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is written in reference to application number 10/716632 filed on November 20, 2003 and published as US 2004/0072103 A1 on April 15, 2004.

#### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### *Information Disclosure Statement*

2. The Information Disclosure Statement filed on November 20, 2003 has been entered and fully considered.

#### *Oath/Declaration*

3. The examiner acknowledges the declaration submitted pursuant to 37 CFR 1.132 by inventor Nitta on November 20, 2003.

#### *Terminal Disclaimer*

4. The terminal disclaimer filed on November 20, 2003 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of US 6,444,394 has been reviewed and is accepted. The terminal disclaimer has been recorded.

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakeyama (US 5750309 A). Hatakeyama teaches a chemically amplified positive resist composition comprising an organic solvent, a resin and a photoacid generator (abstract). The said resin comprises at least two polyhydroxystyrene polymers of the given formula (1) having different molecular weights and some of the hydroxyl groups are protected by an acid labile group. Suitable acid labile groups include linear or branched alkyl groups having 1-8 carbon atoms (i.e., t-butyl, cyclohexyl); alkoxyalkyl groups of the given formula (2) (i.e., ethoxyethyl, t-butoxyethyl); alkoxy carbonyl or alkoxy carbonyl alkyl groups of the given formula (3) (i.e., t-butoxy carbonyl); tetrahydropyranyl groups and tetrahydrofuranyl groups (c. 3, l. 16-64). In the given formula (1), the letters p and q are such numbers that  $p/(p+q)$  is at least 0.05 and represents the degree of protective group substitution (c. 3, l. 65-c. 4, l. 2). The ratio of the high molecular weight polymer ( $Mw_1$ ) to the lower molecular weight polymer ( $Mw_2$ ) is at least 1.5/1 (c. 1, l. 51-c. 2, l. 14). Hatakeyama teaches that with a  $Mw_1/Mw_2$  below 1.5 the advantages of improved resolution and minimized edge roughness are lost (c. 4, l. 16-18). It is the examiner's position that the claimed ranges of substituted and unsubstituted hydroxy groups fall within the taught limitations of having a  $p/(p+q)$  of at least 0.05 (i.e., 5%). Hatakeyama teaches that if the value or  $p/(p+q)$  is less than 0.05 an unsatisfactory profile is obtained. Specifically, example E4 teaches a one resin having a 9% degree of substitution and another having a 25% degree of substitution. Thereby establishing a one resin having

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a higher degree of substitution than the other. Table 1 exemplifies the use of a high molecular weight polymer and a low molecular weight polymer made of the said polymer thereby giving a mixture wherein the same acid labile groups substitute both polyhydroxystyrene resins. Thereby providing motivation to one of ordinary skill to make the acid labile group of the first polyhydroxystyrene identical to that of the second polyhydroxystyrene resin.

One of ordinary skill in the art would have been motivated by the teachings of Hatakeyama to develop a photoresist composition comprising at least two different polyhydroxystyrene polymers having different molecular weights wherein the hydroxyl groups are partially substituted with acid labile groups such as t-butyl, t-butoxycarbonyl, tetrahydropyranyl and ethoxyethyl wherein the ratio of Mw1 to Mw2 is below 1.5/1 with the expectation that the advantages of improved resolution and minimized edge roughness are lost.

#### *Response to Arguments*

7. Applicant's arguments filed November 20, 2003 have been fully considered but they are not persuasive. Applicants argue that the comparative data in the instant specification shows superior results. The examiner is of the position that the said data is not commensurate in scope with the claimed invention. The Declarant uses a composition which comprises a preferred solvent, a preferred acid generator, and preferred additives which are not set forth in the instant claims. The examiner has no way of evaluating whether the preferred components have an enhanced affect on the results. Furthermore, the examiner cannot make a direct comparison between the

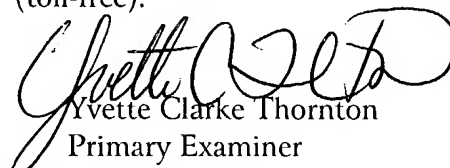
claimed invention and the cited prior art. A better comparison would be to make the composition of the prior art and vary the ratio of  $Mw_{max}/Mw_{min}$ .

*Conclusion*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday 8-6:30.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Yvette Clarke Thornton  
Primary Examiner  
Art Unit 1752

yct  
August 18, 2004